

What is Claimed is

1. A data recording apparatus comprising:

data recording means for recording data on a packet basis onto a track of an optical recording medium;

data pseudo-erasing means for erasing contents information of the track containing the data, thereby pseudo-erasing the data; and

packet position recording means for recording on the optical recording medium information indicating an end position of the packet containing the data,

wherein the data recording means records new data onto the track where the data has been pseudo-erased, in accordance with the information indicating the end position of the packet.

2. The data recording apparatus as claimed in Claim 1, wherein the packet position recording means records the information indicating the end position of the packet in a pre-gap arranged on the track.

3. The data recording apparatus as claimed in Claim 2, wherein the optical recording medium comprises a plurality of tracks and wherein the packet position recording means records the information indicating the end position of the packet in the pre-gap of a first track among the plurality of tracks.

4. The data recording apparatus as claimed in Claim 1, further comprising data erase means for erasing the data which has been pseudo-erased.

5. The data recording apparatus as claimed in Claim 4, wherein the data erase means erases the data pseudo-erased before the new data is recorded by the data recording means.

6. The data recording apparatus as claimed in Claim 4, further comprising data discriminating means for discriminating whether new data up to the end position of the packet is to be updated in accordance with the information indicating the end position of the packet, wherein

when the data discriminating means discriminates that the new data up to the end position of the packet is to be updated, the data recording means records the new data onto the track where the data has been pseudo-erased, and

when the data discriminating means discriminates that the new data up to the end position of the packet is not to be updated, the data recording means records the new data onto the track where the data has been pseudo-erased and the data erase means erases the remaining of the data which has been pseudo-erased.

7. The data recording apparatus as claimed in Claim 1, wherein the packet position recording means records on the optical recording medium information

indicating the end position of the packet containing the new data.

8. The data recording apparatus as claimed in Claim 1, further comprising pseudo-erased data recording means for recording on the optical recording medium information indicating that the data has been pseudo-erased.

9. The data recording apparatus as claimed in Claim 1, wherein the optical recording medium comprises at least one logical track capable of recording data and each of the logical tracks comprises a plurality of the packets.

10. A data recording apparatus comprising:

an optical head for irradiating light to an optical recording medium;

a data recording controller for controlling the optical head so as to record data on a packet basis onto the optical recording medium;

a data pseudo-erasing controller for controlling the optical head so as to erase contents information of a track having the data recorded and pseudo-erase the data; and

a packet position recording controller for controlling the optical head so as to record on the optical recording medium information indicating an end position of the packet in which the data has been recorded;

wherein the data recording controller, in accordance with the information

indicating the end position of the packet, records new data onto the track where the data has been pseudo-erased.

11. The data recording apparatus as claimed in Claim 10, wherein the packet position recording controller records the information indicating the end position of the packet in a pre-gap arranged at a head of the track.

12. The data recording apparatus as claimed in Claim 11, wherein the optical recording medium comprises a plurality of tracks and wherein the packet position recording controller records the information indicating the end position of the packet in the pre-gap of a first track among the plurality of tracks.

13. The data recording apparatus as claimed in Claim 10, wherein the optical head further erases the data which has been pseudo-erased.

14. The data recording apparatus as claimed in Claim 13, wherein the optical head erases the pseudo-erased data before control is performed to record the new data by the data recording controller.

15. The data recording apparatus as claimed in Claim 13, further comprising data discriminating means for discriminating whether the new data up to the end

position of the packet is to be updated in accordance with the information indicating the end position of the packet, wherein

when the data discriminating means discriminates that the new data up to the end position of the packet is to be updated, the data recording means records the new data onto the track where the data has been pseudo-erased, and

when the data discriminating means discriminates that the new data up to the end position of the packet is not to be updated, the data recording means records the new data onto the track where the data has been pseudo-erased and the optical head erases the remaining of the data which has been pseudo-erased.

16. The data recording apparatus as claimed in Claim 10, wherein the packet position recording controller records on the optical recording medium the information indicating the end position of the packet containing the new data.

17. The data recording apparatus as claimed in Claim 10, further comprising pseudo-erased data recording means for recording on the optical recording medium the information indicating that the data has been pseudo-erased.

18. The data recording apparatus as claimed in Claim 10, wherein the optical recording medium comprises at least one logical track capable of recording data and each of the logical tracks comprises a plurality of the packets.

19. A data recording method comprising the steps of:

recording data on a packet basis onto a track of an optical recording medium and erasing contents information of the track containing the data, thereby pseudo-erasing the data;

recording on an optical recording medium information indicating the end position of the packet containing the data; and

a step of records a new data onto the track where the data has been pseudo-erased in accordance with the information indicating the end position of the packet.

20. The data recording method as claimed in Claim 19, wherein the information indicating the end position of the packet is recorded in a pre-gap arranged at a head of the track.

21. The data recording method as claimed in Claim 20, wherein the optical recording medium comprises a plurality of tracks and wherein the information indicating the end position of the packet is recorded in the pre-gap of a first track among the plurality of tracks.

22. The data recording method as claimed in Claim 19, wherein the data pseudo-erased is erased before the new data is recorded by the data recording means.

23. The data recording method as claimed in Claim 19, the method further comprising the step of discriminating whether the new data up to the end position of the packet is to be updated in accordance with the information indicating the end position of the packet, wherein

when the new data up to the end position of the packet is discriminated to be updated, the new data is recorded onto the track where the data has been pseudo-erased, and

when the new data up to the end position of the packet is discriminated not to be updated, the new data is recorded onto the track where the data has been pseudo-erased, and thereafter the remaining of the data which has been pseudo-erased is erased.

24. The data recording method as claimed in Claim 19, further comprising the step of recording on the optical recording medium the information indicating the end position of the packet containing the new data.

25. The data recording method as claimed in Claim 19, further comprising the step of recording on the optical recording medium the information indicating that the data has been pseudo-erased.

26. An optical recording medium having a track on which data is recorded

on packet basis, wherein the data is pseudo-erased by erasing only the contents information of the track on which the data has been recorded, and having information recorded to indicate the end position of the packet containing the data.

27. The optical recording medium as claimed in Claim 26, wherein the information indicating the end position of the packet is recorded in a pre-gap of the track.

28. The optical recording medium as claimed in Claim 27, comprising a plurality of tracks and the information indicating the end position of the packet is recorded in the pre-gap of a first track among the plurality of tracks.

29. The optical recording medium as claimed in Claim 26, further comprising at least one logical track capable of recording data, each logical track having the pre-gap and a plurality of the packets.